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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/598,607	09/06/2006	Levinus Pieter Bakker	NLO40247	7785
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EXAMINER BROOKS, JERRY L.				
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

# Office Action Summary

**Application No.**

10/598,607

**Applicant(s)**

BAKKER ET AL.

**Examiner**

JERRY BROOKS

**Art Unit**

4126

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 06 September 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/CDC)
- 4) ☐ Interview Summary (PTO-413)
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_
- Paper No(s)/Mail Date \_\_\_\_

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 102***

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

1. Claims 1, 2, 4 and 19 are selected under 35 U.S.C. 102(b) as being anticipated by Gotoh (US Patent 5,826,960).
2. With respect to claim 1, Gotoh (US Patent 5,826,960), herein after referred to as "Gotoh," discloses (col. 8, line 45 - col. 10, line 11, fig. 4 ) a system (fig.4, 100) for projecting an image on a display comprising: a first dichroic means (fig.4, 30a) receiving a first, a second and a third primary coloured light beam and adapted to transmit the first and to reflect the second and third primary coloured light beams, a second dichroic means (fig.4, 30b) receiving said second and third primary coloured light beam and adapted to reflect said second primary coloured light and to transmit said third primary coloured light beam, characterized in further comprising: a first polarizing means (fig.4, 16a) receiving said first primary coloured light beam, a second polarizing means (fig.4, 16c) receiving said second primary coloured light beam, and a third polarizing means (fig.4, 16b) receiving said third primary coloured light beam, which first, second and third polarizing means (fig.4:16a, 16c, 16b) being adapted to transmit light polarized in a desired direction, and further comprising a reflective rotating means (fig.4: 22, 20) receiving reflected first, second and third primary coloured light beams polarized in an undesired direction from at least one of said first, second and third polarizing (fig.4: 16a, 16c, 16b) means and adapted to convert said light polarized in said undesired direction

to converted light polarized in said desired direction and reflect said converted light back to said first, second and third polarizing means.

With respect to claim 2, Gotoh discloses a system according to claim 1, further comprising a first (fig.4, 14a), second (fig.4, 14b) and third (fig.4, 14c) transmissive light valve (fig.4, 14 (a, b, c)) means receiving said first, said second and said third primary coloured light beam (see fig.4), respectively, and each of said first, second and third transmissive light valve means being adapted to modulate one of said first, said second and said third primary coloured light beams (see fig.4).

With respect to claim 4, Gotoh discloses a system according to claim 1, wherein said first, said second and said third primary coloured light beam are coloured blue (see Description of Preferred Embodiments, Column 9, lines 33-55), green (see Description of Preferred Embodiments, Column 9, lines 52-54) and red (see Description of Preferred Embodiments, Column 9, lines 15-17), respectively.

With respect to claim 19, Gotoh discloses a system according to claim 2, wherein said second polarizing means (fig. 4, 16c) is adapted to rotate so as to control amount of said second primary coloured light beam reaches said second light valve means (see Description of Preferred Embodiments, Column 9, lines 40-45).

### ***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 3, 5 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over by Gotoh (US Patent 5,826,960) in view of Maximus (US Patent 6,830,339).
- 5.
6. With respect 3, Gotoh (US Patent 5,826,960) herein after referred to as "Gotoh," discloses a system according to claim 2, but does not disclose a system further comprising a recombination prism receiving modulated first, second and third primary coloured light. However, the use of recombination prisms in LCD projectors was well known in art as evidenced by Maximus' (US Patent 6,830,339) herein after referred to as "Maximus," LCD projector (fig. 10) in figure 10 (38). At the time of invention, it would have been obvious to one of ordinary skill in the art to use a recombination prism as evidenced by Maximus in Gotoh's device instead of a mirror to reduce material cost. Therefore, it would have been motivated to use a recombination prism in Gotoh's device.
7. With respect to claim 5, Gotoh discloses a system according to claim 1, wherein said reflective rotating means (20, 22) comprises a quarter wave plate (fig.4, 22; see Description of Preferred Embodiments: Column 6, lines 45-50) adapted to receive said reflected first, second and third primary coloured light beams polarized in said undesired direction and to rotate polarization of said reflected first, second and third primary coloured light beams by 90° (see Description of Preferred Embodiments: Column 9, 10-15), and mirror (fig. 4, 20; see Description of Preferred Embodiments: Column 9, lines 10-16) having reflective regions adapted to reflect rotated reflected first, second and

third primary coloured light beams received from said quarter wave plate (fig.4, 20) back through said quarter wave plate thereby establishing a rotation of polarization of reflected first, second and third primary coloured light beams to a desired direction (see Description of Preferred Embodiments: Column 9, 10-15).

8. Gotoh does not disclose the mirror being patterned. Maximus teaches a LCD projector (fig. 10) with reflecting rotating means (fig. 2) comprising a quarter wave plate (fig. 2, 24) adapted to receive said reflected first, second and third primary coloured light beams polarized (see fig. 2) in said undesired direction and to rotate polarization of said reflected first, second and third primary coloured light beams by  $90^\circ$  and a patterned mirror (see Abstract and fig.2, 22) having reflective regions (fig.2, 22) adapted to reflect rotated reflected first, second and third primary coloured light beams received from said quarter wave plate (fig.2, 24) back through said quarter wave plate thereby establishing a rotation of polarization of reflected first, second and third primary coloured light beams to a desired direction. At the time of invention, it would have been obvious to one of ordinary skill in the art use Maximus' patterned mirror (fig.2, 22) in Gotoh's projector to reduce the size of the projector. Therefore, it would have been motivated to use Maximus' patterned mirror in Gotoh's device.

9. With respect to claim 6, Gotoh in view of Maximus discloses a system according to claim 5 as discussed, wherein said patterned mirror (fig. 3, 22) comprises transparent regions (fig. 2, 6) adapted to transmit said first, second and third primary coloured light beams polarized in said desired and said undesired direction from a light source (fig.2, 12-15) to said quarter wave plate (fig.3, 24).

10. Claims 7-18 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over by Gotoh (US Patent 5,826,960) in view of Manube (US Patent 6,507,326).

11. With respect to claim 7, Gotoh (US Patent 5,826,960) herein after referred to "Gotoh (US Patent 5,826,960)," discloses a system according to claim 1, but does not disclose the system wherein said first dichroic means is operable as a low pass filter having a threshold for p-polarized light at the upper spectral limit of the spectral range of said first primary coloured light beam. Manabe (US Patent 6,507,326) herein after referred to as "Manabe," teaches an LCD projector (fig. 4) which contains a dichroic mirror means (column 11, 65 – 67, fig. 4, 113) that is operable as a low pass filter having a threshold for p-polarized light at the upper spectral limit of the spectral range of said first primary coloured light beam (Column 12, lines 10-20). Manabe also teaches the use of said dichroic mirror to produce a high-contrast projected image (Summary of the Invention; column 4, lines 45-65). At the time of invention, it would have been obvious to one of ordinary skill in the art to use a Manabe dichroic mirror as first dichroic mirror instead of Gotoh's first dichroic mirror to improve the contrast of the image (Summary of the Invention; column 4, lines 45-65). Therefore, it would have been motivated to combine the teachings Gotoh and Manube.

12. With respect to claim 8, Gotoh discloses a system according to claim 1, but does not disclose the system wherein said second dichroic means is operable as a high pass filter having a threshold for p-polarized light at the upper spectral limit of the spectral range of the second primary coloured light beam. Manube teaches an LCD projector (fig. 4) which contains a dichroic mirror means (column 11, 65 – 67, fig. 4, 113) that is operable as a high pass filter having a threshold for p-polarized light at the upper spectral limit of the spectral range of the second primary coloured light beam. (Column 12, 10-20). Manube also teaches the use of said dichroic mirror to produce a high-contrast projected image (Summary of the Invention; column 4, lines 45-65). At the time of invention, it would have been obvious to one of ordinary skill in the art to use a Manube dichroic mirror as second dichroic mirror instead of Gotoh's second dichroic mirror to improve the contrast of the image (Summary of the Invention; column 4, lines 45-65). Therefore, it would have been motivated to combine the teachings Gotoh and Manube.

13. With respect to claim 9, Gotoh in view of Manube discloses a system according to any of claims 7 to 8, wherein said first polarizing means comprising a first polarizer (Gotoh: fig 4.16a) and said second (Gotoh: fig 4.16b) and third polarizing means comprising a reflective polarizer (Gotoh: fig 4.16c).

14. With respect to claim 10, Gotoh discloses the system according to claim 1, but does not disclose the system wherein said second dichroic means is operable as a notch filter having a lower threshold for s-polarized light of the lower spectral limit of the spectral range of said second primary coloured light beam and an upper threshold for s-



polarized light at the upper spectral limit of the spectral range of said second primary coloured light beam. Manube teaches an LCD projector (fig. 4) which contains a dichroic mirror means (column 11, 65 – 67, fig. 4, 113) that is operable as a notch filter (Column 12, 1-10) having a lower threshold for s-polarized light of the lower spectral limit of the spectral range of said second primary coloured light beam and an upper threshold for s-polarized light at the upper spectral limit of the spectral range of said second primary coloured light beam (Column 12, 1-10). Manube also teaches the use of said dichroic mirror to produce a high-contrast projected image (Summary of the Invention; column 4, lines 45-65). At the time of invention, it would have been obvious to one of ordinary skill in the art to use a Manube dichroic mirror as second dichroic mirror instead of Gotoh's second dichroic mirror to improve the contrast of the image. Therefore, it would have been motivated to combine the teachings Gotoh and Manube.

15. With respect to claim 11, Gotoh in view of Manube discloses a system according to claim 10, wherein said first polarizing means comprising a first polarizer (Gotoh: fig 4.16a), said second polarizing means comprising a second polarizer (Gotoh: fig 4.16b), and said third polarizing means comprising a reflective polarizer (Gotoh: fig 4.16c).

16. With respect to claim 12, Gotoh in view of Manube discloses a system according to claim 11 as discussed above, Gotoh does not teach the system further comprising a third dichroic means operable as a high pass filter having a threshold equal to lower spectral limit of the spectral range of said second primary coloured light beam. Manabe teaches an LCD projector (fig. 4) which contains a dichroic mirror means (column 11, 65 – 67, fig. 4, 113) that is operable as a high pass filter having a threshold equal to lower

spectral limit of the spectral range of said second primary coloured light beam (Column 12, 1-10). Manube also teaches the use of said dichroic mirror to produce a high-contrast projected image (Summary of the Invention; column 4, lines 45-65). At the time of invention, it would have been obvious to one of ordinary skill in the art to use a Manube dichroic mirror as third dichroic mirror instead of Gotoh's third mirror to improve the contrast of the image (Summary of the Invention; column 4, lines 45-65). Therefore, it would have been motivated to combine the teachings Gotoh and Manube.

17. With respect to claim 13, Gotoh in view of Manube discloses a system according to claim 11 as discussed above, but Gotoh does not disclose a system comprising a third dichroic means operable as a low pass filter having a threshold for s-polarized light at the lower spectral limit of the spectral range of said third primary coloured light. Manabe teaches an LCD projector (fig. 4) which contains a dichroic mirror means (column 11, 65 – 67, fig. 4, 113) that is operable as a low pass filter having a threshold for s-polarized light at the lower spectral limit of the spectral range of said third primary coloured light (Column 12, lines1-10). Manube also teaches the use of said dichroic mirror to produce a high-contrast projected image (Summary of the Invention; column 4, lines 45-65). At the time of invention, it would have been obvious to one of ordinary skill in the art to use a Manube dichroic mirror as third dichroic mirror instead of Gotoh's third mirror to improve the contrast of the image (Summary of the Invention; column 4, lines 45-65). Therefore, it would have been motivated to combine the teachings Gotoh and Manube.

18. With respect to claim 14, Gotoh in view of Manube discloses a system according to claim 13 as discussed above, but Gotoh does not disclose a system, wherein said low pass filter having a threshold for p-polarized light above the spectral limit of the spectral range of said third primary coloured light. Manabe teaches an LCD projector (fig. 4) which contains a dichroic mirror means (column 11, 65 – 67, fig. 4, 113) operable as a low pass filter having a threshold for p-polarized light above the spectral limit of the spectral range of said third primary coloured light (Column 1, 2, lines 10-20). Manube also teaches the use of said dichroic mirror to produce a high-contrast projected image (Summary of the Invention; column 4, lines 45-65). At the time of invention, it would have been obvious to one of ordinary skill in the art to use a Manube dichroic mirror as third dichroic mirror instead of Gotoh's third mirror to improve the contrast of the image (Summary of the Invention; column 4, lines 45-65). Therefore, it would have been motivated to combine the teachings Gotoh and Manube.

19. With respect to claim 15, Gotoh in view of Manube discloses a system according to claim 13, further comprising a white mirror (fig.4, 20) for reflecting s-polarized light in the spectral range of the first primary coloured light beam, p-polarized light in the spectral ranges of said second and third primary coloured light beams.

20. With respect to claim 16, Gotoh discloses the system according to claim 1, but does not disclose the system according to claim 1, wherein said second dichroic means is operable as a high pass filter having a threshold for s-polarized light at the upper spectral limit of the spectral range of said second primary coloured light beam. Manabe teaches an LCD projector (fig. 4) which contains a dichroic mirror means (column 11, 65

– 67, fig. 4, 113) that is operable as a high pass filter having a threshold for s-polarized light at the upper spectral limit of the spectral range of said second primary coloured light beam (Column 12, lines 1-10). Manube also teaches the use of said dichroic mirror to produce a high-contrast projected image (Summary of the Invention; column 4, lines 45-65). At the time of invention, it would have been obvious to one of ordinary skill in the art to use a Manube dichroic mirror as third dichroic mirror instead of Gotoh's third mirror to improve the contrast of the image (Summary of the Invention; column 4, lines 45-65). Therefore, it would have been motivated to combine the teachings Gotoh and Manube.

21. With respect to claim 17, Gotoh in view of Manube discloses the system according to claim 16, wherein A system according to claim 16, wherein said first polarizing means comprising a first polarizer (16a), said second polarizing means comprising a second polarizer (16b), and said third polarizing means comprising a reflective polarizer (16c).

22. With respect to claim 18, Gotoh in view of Manube discloses the system according to claim 17 as disclosed above, Gotoh does not disclose a system according to claim 17 further comprising a third dichroic means operable as a high pass filter having a threshold for s-polarized light at the upper spectral limit of the spectral range of the second primary coloured light beam. Manabe teaches an LCD projector (fig. 4) which contains a dichroic mirror means (column 11, 65 – 67, fig. 4, 113) that is operable as a high pass filter having a threshold for s-polarized light at the upper spectral limit of the spectral range of the second primary coloured light beam(Column

12, lines 10-20). Manube also teaches the use of said dichroic mirror to produce a high-contrast projected image (Summary of the Invention; column 4, lines 45-65). At the time of invention, it would have been obvious to one of ordinary skill in the art to use a Manube dichroic mirror as third dichroic mirror instead of Gotoh's third mirror to improve the contrast of the image (Summary of the Invention; column 4, lines 45-65). Therefore, it would have been motivated to combine the teachings Gotoh and Manube.

23. With respect to claim 20, Gotoh discloses a system according to claim 2, but does not disclose the system wherein the second polarizing means comprises a normal polarizer. However, a normal polarizer was well known in the art as evidenced by Manabe's LCD projector (fig. 4) which contains a normal polarizer (fig.1, 44). At the time of invention it would have been obvious to one of ordinary skill in the art to use a normal polarizer for the second polarizing means in Gotoh's device to reduce the manufacturing cost. Therefore it would have been motivated to use a normal polarizer in Gotoh's device.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JERRY BROOKS whose telephone number is (571)270-5711. The examiner can normally be reached on Monday-Thursday: 10 a.m.-5 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tu Nguyen can be reached on (571)272-2424. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/JERRY BROOKS/  
Examiner, Art Unit 4126

/James P. Hughes/  
Primary Examiner, Art Unit 2883